

TWO NEW SPECIES OF *CHOREBUS* (HYMENOPTERA: BRACONIDAE) FROM SPAIN¹

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ABSTRACT: *Chorebus pseudometallicus* and *C. pseudoasini*, two new species from Spain, are described and compared with allied species of the genus.

The subfamily Alysiinae is one of the most distinctive subfamilies of the Braconidae because all members possess the exodont condition and are endoparasitoids of cyclorrhaphous Diptera.

This subfamily is subdivided traditionally into two tribes: Alysiini and Dacnusiini. *Chorebus* Haliday, whose species are endoparasitoids of Agromyzidae and Ephydriidae Diptera (there exists only one exception, a species that attacks *Psila rosae* [F.]), is the largest genus of Dacnusiini with approximately 215 Holarctic species. Many of its species are characterized morphologically by having a densely setose metapleuron (metapleural rosette) and usually a sculptured sternaulus. We have discovered two new species, described below, which were obtained netting on Papilionaceae, in Alcira (province of Valencia), Spain. The Dacnusiini have been dealt with, both at the morphological and biological levels, by Griffiths (1964, 1966, 1968, 1984) and Tobias (1986, summary of the Palearctic taxa with keys to genera and species, translated into English 1995).

Terms for body morphology and wing venation follow Griffiths (1964) and Wharton (1977, 1986).

Chorebus pseudometallicus NEW SPECIES

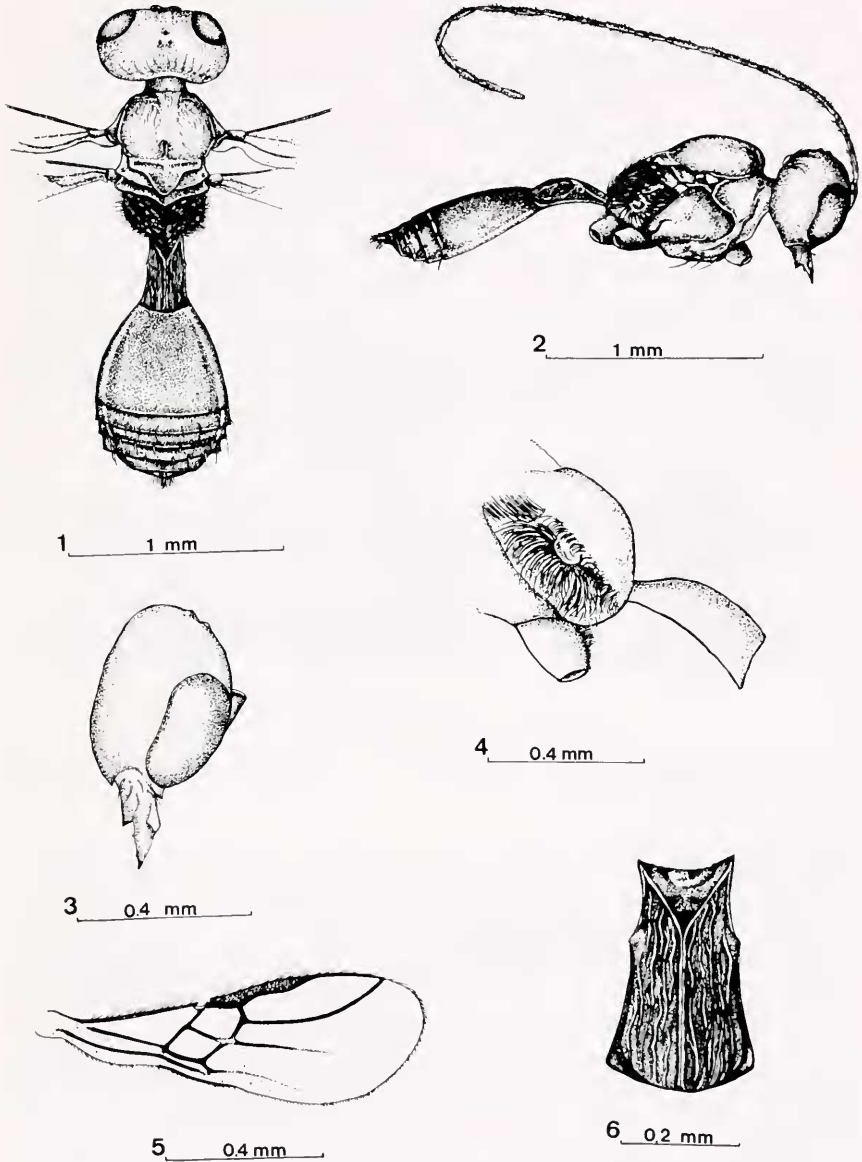
Female: Head (Figs. 1, 2, 3) – Transverse, 1.87 times wider than long, 1.25 times higher than long; occiput bare; vertex with scattered pubescence; base of the mandibles with tenuous pubescence; eyes in lateral view 0.87 times as long as the temples; temples bulging beyond eyes in dorsal view; eyes strongly converging below; face 1.4 times as wide as high; antennae with 23 antennomeres, apical flagellomeres ca 2.5-3.2 times as long as wide; mandibles 3-tooth, 1st relatively small, weakly expanded, blunt, 2nd tooth very long and pointed, 3rd tooth short, expanded, slightly pointed; maxillary palpi long.

Mesosoma (Figs. 1, 2, 4) – 1.28 times as long as high, 1.71 times as long as width between tegulae; pronotum bare and shining, only setose along anterior oblique suture; mesonotal disc extensively bare, with only scattered setae on its anterior half and along each notaular line; midpit shallow, narrow, extending from about posterior 1/3 of disc nearly to posterior margin; notauli scarcely visible, represented by smooth fine line that seems reach midpit; sternaulus extending to posterior border of mesopleuron, narrow, shiny, practically smooth; posterior

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FIGURES 1-6. *Chorebus pseudometallicus* sp. nov. (female).- 1, Body (except legs and wings) in dorsal view; 2, in side view; 3, Head in lateral view; 4, Propodeum in lateral view; 5, Anterior right wing; 6, Petiole in dorsal view.

mesopleural furrow smooth; mesopleuron smooth, shiny, bare, only with a few long setae near the ventral border; metapleuron and propodeum with pubescence only moderately densely setose, which allows its rugose sculpture to be clearly seen; posterior coxae with a setae tuft little differentiated on its posterior margin.

Wings (Fig. 5) - Pterostigma quite narrow and little darkened, 1.2 times longer than the metacarpus; 1st radial segment shorter than the length between its insertion and the parastigma, and about as long as the pterostigma wide; remainder of radius evenly curved; n. rec. antefurcal; 3rd discoidal segment represented only by a shadow, so that cell B is open at its lower distal corner.

Metasoma (Figs. 1, 2, 6) - Petiole 1.4 times longer than wide apically, glabrous, grooved, with a pronounced central ridge; ovipositor sheath setose, robust, extending slightly beyond last tergite in resting position.

Color and size - Head, mesosoma and metasoma black; face black, clypeus and labrum darkish; maxillary and labial palpi dark brown - the labial palpi a little lighter-; antennae black, with yellowish brown pedicel and base of the scape; centre of mandibles reddish-yellow; mesopleuron black shiny; legs reddish-brown, with middle and posterior coxae, tibiae and tarsi more infuscated (darker); wings hyaline, with dark pterostigma. Body length: 2.1 mm.

Male: unknown. **Host:** unknown.

Material examined: [deposited in the Fundación Entomológica "Torres-Sala" (Docavo Collection) (Valencia, Spain)]; Holotype: female, SPAIN: Valencia: Alcira, 30-II-1963 (leg. I. Docavo). Paratype: female, SPAIN: Valencia: Alcira, 30-II-1963 (leg. I. Docavo).

Etymology: The specific name of this species makes reference to *C. metallicus* Griffiths [Griffiths, 1968], to which the new species is very similar.

Chorebus pseudoasini NEW SPECIES

This new species appears very close to *C. pseudometallicus*, but can be distinguished by the following characters:

Female: Head - Weakly transverse, 1.6 times wider than long, 1.4 times higher than long; base of the mandibles with well differentiated pubescence (Fig. 7).

Mesosoma - Sternaulus pointed in its anterior part; posterior coxae with a tuft of setae well differentiated on its posterior margin (Fig. 8).

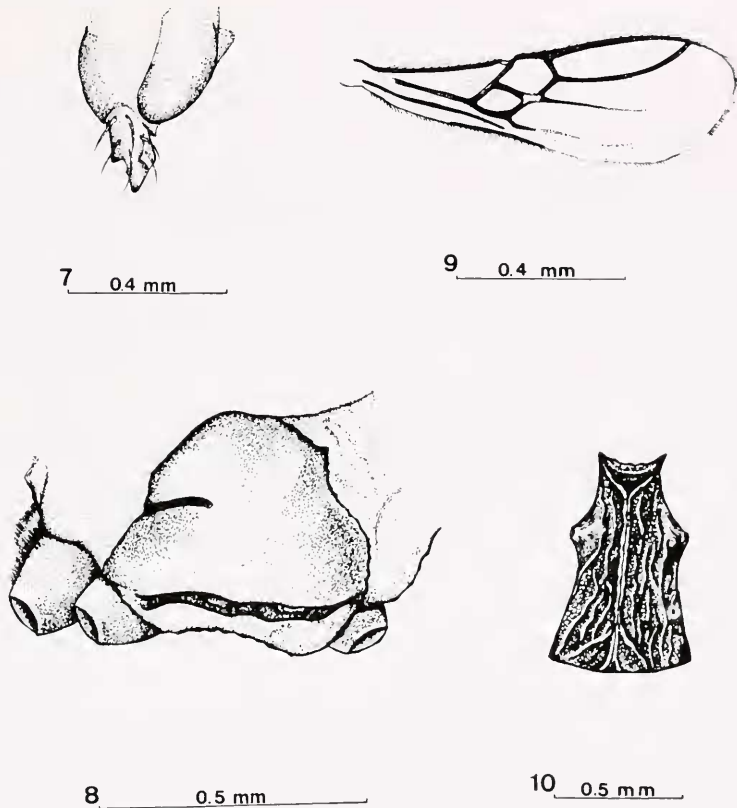
Wings (Fig. 9) - Pterostigma narrow, imperceptibly joining the metacarpus; cell R narrower and shorter, finishing before the tip of the wing; 3rd discoidal segment decolored; cell B incompletely closed.

Metasoma - Petiole 2.1 times longer than wide apically, with the tubercles of the spiracles very pronounced (Fig. 10); last tergite narrow and prolonged covering the ovipositor of which only its apex can be appreciated.

Color and size - anterior and middle coxae a very yellowish reddish brown; posterior very dark. Body length: 1.9 mm.

Male: unknown. **Host:** unknown.

Material examined: [deposited in the Fundación Entomológica "Torres-Sala" (Docavo Collection) (Valencia, Spain)]; Holotype: female, SPAIN: Valencia: Alcira, 28-II-1960 (leg. I. Docavo). Paratypes: 2 females, Valencia: Alcira, 28-II-1960 (leg. I. Docavo).



FIGURES 7-10. *Chorebus pseudoasini* sp. nov. (female). - 7, Mandible in lateral view; 8, Sternaulus and lateral view of the right posterior coxae; 9, Anterior right wing; 10, Petiole in dorsal view.

Etymology: The specific name makes reference to the closely related *C. asini* Docavo [Docavo, 1965].

Notes: These new species belong to a group which Griffiths (1964) has described as the "affinis complex". They are similar to *C. metallicus* and *C. asini*, from which they differ in the following respects: a) number of antennomeres; b) pubescence from the base of the mandibles, sides of pronotum, mesonotal disc, metapleuron (rosette), posterior coxae (setae tuft) and propodeum; c) coloring of the legs (particularly of the coxae); d) morphology of the pterostigma, cell B (brachial cell), sternaulus and metasoma (specially petiole morphology); e) body length.

C. pseudometallicus can be differentiated from:

C. metallicus: a) By the clearly differentiated metapleuron pubescence (rosette) (Figs. 2, 4) [less differentiated in *C. metallicus*]; b) coxae reddish-brown [in *C. metallicus* gold yellow]; c) anterior oblique suture of the pronotum pubescent (Fig. 2) [in *C. metallicus* the sides of the pronotum are bare and shiny]; d) mesonotal disc slightly pubescent (Fig. 1) [*C. metallicus* has only a few setae along the notauli]; e) pubescence on propodeum more dense than in *C. metallicus* (Figs. 1, 2, 4).

C. asini: a) Antennae with 23 antennomeres [*C. asini* has 25 antennomeres]; b) mesonotal disc more shiny and less pubescent (Fig. 1) [in *C. asini* dull and much more setose]; c) legs lighter; d) sides of pronotum pubescent (Fig. 2) [in *C. asini* they are practically glabrous]; e) sternaulus narrow, pointed anteriorly (Fig. 2) [in *C. asini* completely smooth]; f) pterostigma narrower (Fig. 5).

C. pseudoasini: Due to the morphological characters previously explained in the description of this species. The differences between this species and *C. asini* are the same as those of *C. pseudometallicus* except the number of antennomeres which is 23.

The most important characteristic for recognizing these species lie in well differentiated metapleural rosette for *C. pseudometallicus* (Figs. 2, 4), and in well differentiated setae tuft in the posterior coxae for *C. pseudoasini* (Fig. 8).

The four species: *C. pseudometallicus*, *C. metallicus*, *C. pseudoasini* and *C. asini*, can be distinguished in table I.

Table I - Morphological characterization of *C. pseudometallicus*, *C. metallicus*, *C. pseudoasini* and *C. asini* [differentiated character (*); scarcely differentiated or missing (-)]. Number of antennomeres (1). Pubescence well differentiated in: base of mandibles (2), sides of pronotum (3), mesonotal disc (4), metapleuron (rosette) (5), propodeum (6); coxae dark (7), pterostigma narrow (8); cell B completely open (9); sternaulus completely smooth (10); posterior coxae (setae tuft) (11), Tubercles of the spiracles greatly differentiated (12).

Species	1	2	3	4	5	6	7	8	9	10	11	12
<i>C. pseudometallicus</i>	23	-	*	*	*	*	-	*	-	-	-	-
<i>C. metallicus</i>	21/22	-	-	-	-	-	-	*	-	*	-	-
<i>C. asini</i>	25	-	-	*	*	*	*	-	-	*	-	-
<i>C. pseudoasini</i>	23	*	*	*	*	*	-	*	*	-	*	*

These species can be inserted in the keys of Tobias (1995: 340) as follows:

Females

(475) (476)

(475a) (475b)

Antennae with 23 antennomeres. Mesonotal disc more or less shiny, with a few setae along the notauli and central anterior part. Pronotum shiny, with a few setae, fine and scattered, along the anterior oblique suture. Petiole 1.6 to 2.1 times longer than wide, shiny, practically bare, with a well differentiated central ridge and longitudinal grooving. Propodeum scarcely pubescent, more differentiated at its sides, although allowing the sculpture situated underneath to be perceived. Pubescence of the metapleuron (rosette) and propodeum well differentiated and characteristic of the genus *Chorebus*.

(475b) (475c)

Anterior coxae reddish brown, middle and posterior a darker brown with reddish overtones. Petiole almost bare, grooved, with a well differentiated central ridge. Metasoma oval, elongated, less rounded on the apex than in *C. pseudoasini*, without the last tergite being elongated and narrow; ovipositor, therefore, more protruding than in mentioned species. Pterostigma wider than in *C. pseudoasini*, not so imperceptibly joining the metacarpus. Cell B somewhat open in its lower distal corner, with just a trace of the 3rd discoidal segment. Length of body: 2 mm. Host: unknown.

C. pseudometallicus sp. nov.

(475c) (475)

Anterior and middle coxae, a more yellowish reddish brown, but the posterior, partly, darker. Petiole shorter, but with extremely protruding stigmatiferous tubercles. Metasoma rounder, with the last tergite narrow and prolonged, covering the ovipositor, of which only the apex can be seen from above, while in lateral view the ovipositor appears curved upwards. Pterostigma narrow, imperceptibly joining the metacarpus. Cell R narrower and shorter, finishing beyond the extremity of the wing. Cell B completely open, as 3rd discoidal segment is completely missing. Length of body: 1.9 mm. Host: unknown.

C. pseudoasini sp. nov.

(475) (476)

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LITERATURE CITED

- Docavo, I.** 1965. Nuevas aportaciones al conocimiento de los Dacnusiini de España (Hym., Braconidae). Graellsia, XXI: 25-39.
- Griffiths, G.C.D.** 1964. The Alysiinae (Hym., Braconidae) parasites of the Agromyzidae (Diptera). I. General questions of taxonomy, biology and evolution. Beitr. Entomol., 14: 823-914.
- Griffiths, G.C.D.** 1966. The Alysiinae (Hym., Braconidae) parasites of the Agromyzidae (Diptera). II. The parasites of *Agromyza* Fallén. Beitr. Entomol., 16: 551-605.

- Griffiths, G.C.D.** 1968. The Alysiinae (Hym., Braconidae) parasites of the Agromyzidae (Diptera). VII. The parasites of *Cerodontha Rondani* s.l. Beitr. Entomol., 18: 63-152.
- Griffiths, G.C.D.** 1984. The Alysiinae (Hym., Braconidae) parasites of the Agromyzidae (Diptera). VII. Supplement. Beitr. Entomol., 34: 343-362.
- Tobias, W.I.** 1986. Identification key for the insects of the European part of the URSS. Vol. III. Part V. Hymenoptera, Braconidae. pp. 100- 105 (key for genera of Alysiinae), 163-221 (Dacnusiini). Akademia Nauk: Leningrad (in Russian, transl. 1995 in English).
- Wharton, R.A.** 1977. New World *Aphaereta* species (Hymenoptera: Braconidae) with a discussion of terminology used in the tribe Alysiini. Ann. Ent. Soc. Am., 70: 782-803.
- Wharton, R.A.** 1986. The braconid genus *Alysia* (Hymenoptera): a description of the subgenera and a revision of the subgenus *Alysia*. Syst. Ent., 11: 453-504.
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BOOKS RECEIVED AND BRIEFLY NOTED

INVERTEBRATE SURVEYS FOR CONSERVATION. T.R. New. 1998. Oxford Univ. Press. 240 pp. \$35.00 (paperback).

A comprehensive guide to the ecological methods used to survey invertebrate animals in terrestrial, freshwater, and marine environments. It describes how to select taxonomic groups for study, how to collect and analyse samples, and how to set priorities for protection.

MELANISM. EVOLUTION IN ACTION. M.E.N. Majerus. 1998. Oxford Univ. Press. 338 pp. \$105.00 (cloth); \$45.00 (paperback).

Placing melanism into its historical and scientific context, the author considers the diversity of melanism in the animal and plant worlds, and its physical and genetic properties. Examining melanism in moths and ladybeetles in detail, he explores the diversity of evolutionary reasons for melanism and the complexities underlying this phenomenon.

THE BIRDER'S BUG BOOK. G. Waldbauer. 1998. Harvard Univ. Press. 290 pp. \$27.95 (hardcover).

This book is an interesting introduction into the many fascinating relationships between birds and insects. As past cons have come and gone, birds and insects have become increasingly enmeshed in a complex web of interrelationships: birds eating insects, bloodsucking insects feeding on birds, parasitic insects infesting birds, and birds struggling to rid themselves of the parasites. In this book, the author describes these and many other interactions between birds and insects.